Stochastic Hydrology and Hydraulics

Vol. 5 · 1991

Editor

T. E. Unny, Dept. of Systems Design Eng., University of Waterloo, Waterloo, Ontario N2L 3Gl, Canada, tel. (519) 885-1211 ext. 4650, tx. 069-55259

Advisory Board

A. Afouda, Cotonou, Benin
M. B. Beck, London, U. K.
A. Bensoussan, Le Chesnay, France
B. Bobee, St.-Foy, Quebec, Canada
T. A. Buishand, de Bilt, Netherlands
J. H. Cushman, West Lafayette/IN, USA
G. Dagan, Tel-Aviv, Israel
J. W. Delleur, West Lafayette/IN, USA
L. Duckstein, Tucson/AZ, USA
A. El-Shaarawi, Burlington, Canada
T. Etoh, Osaka, Japan
J. Gani, Canbarra, Australia
V. Gupta, Boulder/CO, USA
M. Hino, Tokyo, Japan
Karmeshu, Delhi, India
M. L. Kavvas, Davis/CA, USA
J. Kelman, Rio de Janeiro, Brazil
R. Krzysztofowicz, Charlottesville/VA, USA
G. de Marsily, Fontainebleau, France
G. Lin, Taipei, Taiwan
P. Nachtnebel, Wien, Austria
R. M. Phatarfod, Clayton, Victoria, Australia
E. Plate, Karlsruhe, FRG
N. U. Prabhu, Ithaca/NY, USA
V. Privalski, Moscow, USSR
S. Rinaldi, Milano, Italy
D. Rosbjerg, Lyngby, Denmark
H. W. Shen, Berkeley/CA, USA
C. Shuzheng, Silver Spring/MD, USA
V. P. Singh, Baton Rouge/LA, USA
W. G. Strupczewski, Warszawa, Poland
T. Takasao, Kyoto, Japan
B. M. Troutman, Lakewood, CO, USA
O. F. Vasiliev, Novosibirsk, USSR
V. Yevjevich, Highlands Branch, CO, USA

Springer International

Stochastic Hydrology and Hydraulics

"Stochastic Hydrology and Hydraulics" will publish research papers, reviews and technical notes on stochastic and probabilistic approaches to hydrology and hydraulics by covering all processes of the hydrological cycle including water quality. It is expected that the contributions will encompass a wide range of theory and applications including stochastic differential equations in hydrology and hydraulics, parameter estimation and identification techniques, random hydrodynamic fields, multivariate analysis, real-time hydrologic forecasting, extreme value statistics, reservoir theory, geostatistics, stochastic control and programming, contaminant transport in random environment, wave problems, chaotic systems, stochastic turbulence modeling, stochastic boundary layer problems, risk and reliability analysis.

Copyright

Submission of a manuscript implies: that the work described has not been published before (except in the form of an abstract or as part of a published lecture, review, or thesis); that it is not under consideration for publication elsewhere; that its publication has been approved by all co-authors, if any, as well as by the responsible authorities at the institute where the work has been carried out; that, if and when the manuscript is accepted for publication, the authors agree to automatic transfer of the copyright to the publisher; and that the manuscript will not be published elsewhere in any language without the consent of the copyright holders. All articles published in this journal are protected by copyright, which covers the exclusive rights to reproduce and distribute the article (e.g., as offprints), as well as all translation rights. No material published in this journal may be reproduced photographically or stored on microfilm, in electronic data bases, video disks, etc., without first obtaining written permission from the publisher.

The use of general descriptive names, trade names, trademarks, etc., in this publication, even if not specifically identified, does not imply that these names are not protected by the relevant laws and regulations.

While the advice and information in this journal is believed to be true and accurate at the date of its going to press, neither the authors, the editors, nor the publisher can accept any legal responsibility for any errors or omissions that may be made. The publisher makes no warranty, express or implied, with respect to the material contained herein.

Special regulations for photocopies in the USA: Photocopies may be made for personal or in-house use beyond the limitations stipulated under Section 107 or 108 of U.S. Copyright Law, provided a fee is paid. This fee is US $ 0.20 per page, per copy, plus a basic fee of US $ 2.00 per article. All fees should be paid to the Copyright Clearance Center, Inc., 21 Congress Street, Salem, MA 01970, USA, stating the ISSN 0931-1955, the volume, and the first and last page numbers of each article copied. The copyright owner's consent does not include copying for general distribution, promotion, new works, or resale. In these cases, specific written permission must first be obtained from the publisher.

Printers: Gallus, Berlin
Printed in Germany

© Springer-Verlag Berlin Heidelberg 1991

Springer Verlag GmbH & Co. KG,
W-1000 Berlin 33, FRG

Table of contents

Originals

Andricevic, R.; Foufoula-Georgiou, E.: Modeling kinetic non-equilibrium using the first two moments of the residence time distribution 155

Ashkar, F.: see Duckstein, L. 227

Ben-Zvi, A.: Observed advantage for Negative Binomial over Poisson Distribution in partial duration series 135

Bobee, B.: see Duckstein, L. 227

Braester, C.: see Zeitoun, D. G. 207

Braud, I.; Obled, Ch.: On the use of emperical orthogonal function (EOF) analysis in the simulation of random fields 125

Cvetkovic, V. D.; Dagan, G.; Shapiro, A. M.: An exact solution of solute transport by one-dimensional random velocity fields 45

Dagan, G.: see Cvetkovic, V. D. 45

Dracup, J. A.: Drought monitoring 261

Duckstein, L.; Bobee, B.; Ashkar, F.: A multiple criteria decision modelling approach to selction of estimation techniques for fitting extreme floods 227

Foufoula-Georgiou, E.: see Andricevic, R. 155

Govindaraju, R. S.; Kavvas M. L.: Stochastic overland flows. Part 2: Numerical solutions of evolutionary probability density functions 105

Govindaraju, R. S.: see Kavvas M. L. 89

Hong, H. P.: see Lind, N. C. 77

Kavvas M. L.; Govindaraju, R. S.: Stochastic overland flows. Part 1: Physics-based evolutionary probability distributions 89

Kavvas M. L.: see Govindaraju, R. S. 105

Krstanovic, P. F.; Singh, V. P.: A univariate model for long-term streamflow forecasting: 1. Development 173

Krstanovic, P. F.; Singh, V. P.: A univariate model for long-term streamflow forecasting: 2. Application 189

Krzysztofowicz, R.: Drought forecasting: Methdological topics from a systems perspective 267

Krzysztofowicz, R.; Reese, S.: Bayesian Aaalyses of seasonal runoff forecasts 295

Kumar, P.; Unny, T. E.; Ponnambalam, K.: Stochastic partial differential equations in groundwater hydrology Part 2: Application to Borden aquifer 239

Lind, N. C.; Hong, H. P.: Entropy estimation of hydrological extremes 77

Matalas, N. C.: Drought description 255

Montfort, van M. A. J.; Otten, A.: The first and the second e of the extreme value distribution, EV1 69

Obled, Ch.: see Braud, I. 125

Otten, A.: see Montfort, van M. A. J. 69

Ponnambalam, K.: see Kumar, P. 239

Rasmussen, P. F.; Rosbjerg, D.: Evaluation of risk concepts in partial duration series 1

Reese, S.: see Krzysztofowicz, R. 295

Revfeim, K. J. A.: Annual maxima and totals of seasonally varying processes 147

Rosbjerg, D.: see Rasmussen, P. F. 1

Seo, D.-J.; Smith, J. A.: Rainfall estimation using raingages and radar – A Bayesian Approach: 1. Derivation of estimators 17

Seo, D.-J.; Smith, J. A.: Rainfall estimation using raingages and radar – A Bayesian Approach: 2. An application 31

Shapiro, A. M.: see Cvetkovic, V. D. 45

Singh, K.; Singh, V. P.: Derivation of bivariate probability density functions with exponential marginals 55

Singh, V. P.: see Singh, K. 55

Singh, V. P.: see Krstanovic, P. F. 173, 189

Smith, J. A.: see Seo, D.-J. 17, 31

Unny, T. E.: see Kumar, P. 239

Zeitoun, D. G.; Braester, C.: A Neumann expansion approach to flow through heterogeneous formations 207

Technical reports 280

Editorial 253